

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99
Revised 9/20/02

RCRA Corrective Action
Environmental Indicator (EI) RCRA Info code (CA725)
Current Human Exposures Under Control

Facility Name: Hawkeye Castings, Inc.
Facility Address: 1077 South Third Street, Manchester, Iowa
Facility EPA ID #: IAD984599589

DETERMINATION RESULT: YES

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes - check here and continue with #2 below.

 If no - re-evaluate existing data, or

 if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRA Info national database ONLY as long as they remain true (i.e., RCRA Info status codes must be changed when the regulatory authorities become aware of contrary information).

RCRA



518949

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**¹ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria [e.g., Maximum Contaminant Levels (MCLs), the maximum permissible level of a contaminant in water delivered to any user of a public water system under the Safe Drinking Water Act] from releases subject to RCRA Corrective Action (from SWMUs, RUs, or AOCs)?

| Media | Yes | No | ? | Rationale/Key Contaminants |
|-----------------------------|-----|----|---|---|
| Groundwater | | X | | |
| Air (indoors) ² | | X | | Site contaminants are non volatile metals |
| Surface Soil (e.g., <2 ft) | | X | | |
| Surface Water | | X | | |
| Sediment | | X | | |
| Subsurf. Soil (e.g., >2 ft) | | X | | |
| Air (outdoors) | | X | | Site contaminants are non volatile metals |

 X If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

 If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

 If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Hawkeye Castings, Inc. (Hawkeye) is located in the Manchester Industrial Park at 1077 South 3rd Street in Manchester, Iowa. The location can further be described as lying in the southwest ¼ of Section 32, Township 89 North, Range 5 west of the Fifth Principal Meridian. The location is shown on Figures 1a and 1b. The business began operating at the noted location in 1961 where they produced aluminum, brass, and bronze castings from sand molds. The site consists of approximately six acres, with a single building housing both the foundry and office/administrative functions.

An area approximately 500 feet by 200 feet west of the plant received waste foundry sand over a period of 30 years, see Figure 2. The sand was generally mixed with site soil and fill to about one foot depth above the original grade. The waste area is thicker closer to the building and thins out 500 feet west of the building. A layer of silt clay was placed over the fill area and overlain with topsoil by the facility prior to closure activities. The Environmental Protection Agency (EPA) established that some portion of the foundry sand generated at the site exceeded the maximum concentration for lead when tested using the toxicity characteristic leaching procedure (TCLP).

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

Closure activities were conducted in 1999 to 2002 under a 3008(h) Consent Order at the site. Closure activities involved sampling and removal of soil and sampling of groundwater and surface water. Surface and subsurface soil samples were collected to determine the extent of contamination. See Figure 3 for soil sample locations.

To address groundwater, four temporary monitoring wells were installed in September 1999 in the area of foundry sand deposition. The depth to groundwater during sample collection activities in 2000, 2001, and 2002 ranged from 3.35 feet to 6.10 feet below ground surface. The well locations, TMW-1, TMW-2, TMW-3, and TMW-4 are shown on Figure 4. The well screens extended 5 feet below and two feet above the static water level encountered during borehole advancement. Groundwater flow direction was determined to be to the southeast. A surface water sample was collected to determine impact of site activities on a nearby unnamed intermittent creek.

The results of the closure activities were provided to EPA in the "RCRA Closure Report for Foundry Sand Disposal Area", dated May 8, 2003. This report concluded and certified that closure activities had been conducted to meet performance standards and that no additional action was required at the facility. The EPA approved the clean closure certification in a letter dated September 26, 2003.

Surface Soil/Subsurface Soil

Prior to closure, lead was identified as the only contaminant in soil at the site. The closure performance standard for lead in surface soil was established at 250 milligrams per kilogram (mg/kg) and for subsurface soil at 500 mg/kg. Locations that exceeded the soil performance standard were excavated and removed from the facility. Confirmation sampling was conducted following excavation and if a performance standard was exceeded, additional excavation was conducted until excavated areas met performance standards. Excavations were backfilled with clean soil. The closure performance standards are below the Regional Screening Level maintained by EPA, dated April 2012 for lead in an industrial setting of 800 mg/kg. The surface soil performance standard is below the RSL for a residential setting of 400 mg/kg. The Hawkeye Castings facility is located in an Industrial Park, as such, the industrial RSL of 800 mg/kg is an appropriate screening level. Therefore, the closure activities remain protective for the continued industrial setting.

Groundwater

The EPA determined lead to be a site contaminant; however to be conservative, groundwater samples were analyzed for the 8 RCRA metals, arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The closure performance standards for groundwater are those listed in Table 1 of Title 40 of the Code of Federal Regulations Part 264 Section 94 (40 CFR 264.94). The values in Table 1 of 40 CFR 264.94 are the maximum contaminant levels (MCLs) under the Safe Drinking Water Act that were in place at the time the table was promulgated. Because the MCLs have changed for most of the metals since the values in Table 1 of 40 CFR 264.94 were promulgated, this document also compares analytical results to current MCLs.

The first and second round of groundwater samples were collected on May 3, 2000, and February 21, 2001, using bailers without filtering. The results of both sample events showed metals (arsenic, cadmium, chromium, lead, and selenium) concentrations that exceeded the performance standards and MCLs. See Table 1 below for bailer method results. Because the turbidity of the bailer method samples was high (ranging from 341 to 2052 nephelometric turbidity units (NTUs)), it is anticipated to be the cause of the performance standard exceedences. A large amount of soil in a water sample (i.e., high turbidity reading) can cause a metal concentration to be significantly higher than a low turbidity sample due to metals adsorbed to the soil particles. The EPA generally prefers that the turbidity for a water sample be below 50 NTUs. Because groundwater sampling with bailers can sometimes create turbid samples or samples with a significant amount of suspended solids such as soil, the turbidity of samples was measured during the sample collection process to evaluate the amount of suspended solids. For some metals, naturally occurring background concentrations can cause an elevated measurement of concentration, especially with suspended soil in the sample, i.e., high turbidity.

Table 1
Groundwater Concentrations Compared to Performance Standards
And Maximum Contaminant Levels

| | Performance Standard, mg/L | Maximum Contaminant Level, mg/L | Maximum GW Concentration, mg/L Bailer method May 2000/February 2001 Turbidity 341 to 2052 NTUs | Maximum GW concentration, mg/L Low flow method April 2001 November 2001 April 2002 September 2002 |
|----------|----------------------------|---------------------------------|---|--|
| Arsenic | 0.05 | 0.01 | 0.101 ** | 0.0045 |
| Barium | 1.0 | 2.0 | 0.584 | 0.0919 |
| Cadmium | 0.01 | 0.005 | 0.032 ** | 0.00731 * |
| Chromium | 0.05 | 0.1 | 0.243 ** | ND (DL 0.015 to 0.020) |
| Lead | 0.05 | 0.015 Action level | 0.594 ** | 0.0088 |
| Mercury | 0.002 | 0.002 | 0.00037 | ND (DL 0.0002) |
| Selenium | 0.01 | 0.05 | ND (DL 0.002 to 0.15**) | ND (DL 0.002 to 0.005) |
| Silver | 0.05 | 0.1 SMCL | 0.030 | ND (DL 0.020 to 0.025) |

Milligrams per liter = mg/L

GW = groundwater

SMCL = secondary maximum contaminant level

Bailer method turbidity ranged from 341 to 2052 NTUs.

Low flow method turbidity ranged from 0 to 70 NTUs.

ND = not detected

DL = Detection limits range

NTU = Nephelometric Turbidity Unit

*= exceeded MCL/action level, but not performance standard

**= exceeded MCL/action level and performance standard

Analyte list was reduced to arsenic, cadmium, chromium, and lead after the April 2001 sampling event showed non detect values for mercury, silver, and selenium; and barium ranging from 0.032 to 0.0919 mg/L, with a performance standard of 1.0 mg/L.

To reduce turbidity generated by manual bailing, four additional sampling rounds were conducted using low-flow peristaltic pumps in April 2001, November 2001, April 2002, and September 2002. The turbidity in the low-flow method samples ranged from 0 to 70 NTUs. The maximum concentrations detected during groundwater sampling using low-flow sampling techniques are presented in Table 1 above in the low flow method column. All of the metals concentrations measured during the four rounds of sampling using low-flow sampling procedures were below closure performance standards and the MCL with the exception of one detection of cadmium.

Cadmium results and turbidity measurements for all sample events using the low flow sampling method are shown in Table 2. Cadmium was not detected in any of the samples collected in Wells TMW-1, TMW-2, and TMW-3, i.e., non-detect in 17 samples. Cadmium was not detected in Well TMW-4 during three of the four rounds of sampling. During the November 2001 sampling event, three samples were collected from this well; one by the facility, and two (an original and split sample) by EPA. The facility sample result was 0.0005 mg/L, below the MCL and performance standard. The EPA original sample was 0.00731 mg/L, below the performance standard, but above the MCL. The EPA split sample was non detect with a detection limit of 0.003 mg/L. A separate turbidity measurement was not collected for these two EPA split samples. Cadmium has not been identified as a site-related chemical. The sole detection above the current MCL is considered an anomaly and not representative of cadmium concentrations in this well.

Table 2
Cadmium Results in Groundwater

| Date | TMW-1 | | TMW-2 | | TMW-3 | | | TMW-4 | |
|-----------------------|-----------------|-------------------|-----------------|-------------------|-----------------|--------------------------------------|-------------------|--------------------------------|-------------------|
| | Cadmium mg/L | Turbidity NTUs | Cadmium mg/L | Turbidity NTUs | Cadmium mg/L | Cadmium mg/L Facility split | Turbidity NTUs | Cadmium mg/L | Turbidity NTUs |
| 4/26/01 | ND (0.005) | 16.8 | ND (0.005) | 61.2 | ND (0.005) | ND (0.005) | 1.5 | ND (0.005) | 68.1 |
| 11/29/01 | ND (0.005) | 60 | ND (0.005) | 70 | ND (0.005) | ND (0.005) | 1.3/0 | 0.0005 | 60 |
| 11/29/01 EPA split | | | | | ND (0.003) | | Not measured | <u>0.00731 *</u> ND (0.003) | Not measured |
| 4/30/02 | ND (0.005) | 7.9 | ND (0.005) | 5.5 | ND (0.005) | ND (0.005) | 1.6/1.0 | ND (0.005) | 15 |
| 9/12/02 | ND (0.005) | 35.5 | ND (0.005) | 1.5 | ND (0.005) | ND (0.005) | 3.3/3.1 | ND (0.005) | 15.4 |

mg/L= milligrams per liter

*=exceeded MCL, but not performance standard

In summary, the results of groundwater sampling do not indicate site-related impact of metals in groundwater.

Surface Water

A surface water sample was collected for analysis from an unnamed creek along the south border of the site to determine potential runoff effects of site contamination. As discussed above, the site contaminant is lead. Lead was not detected in the surface water sample at a detection limit of 100 µg/L. While the project did not include a surface water performance standard, the Integrated Exposure Uptake BioKinetic (IEUBK) model was used to determine that exposure to a surface water lead concentration of 100 µg/L (the sample detection limit) falls within the EPA's health protection goal to ensure that children (< 7 years old) would have no greater than a 5 % chance of exceeding a blood lead concentration of 10 µg/dL. [Refer to attached email dated July 30, 2012.] For example, if one assumes a child is exposed to 100 µg/L in surface water and lives at a residential property with a soil lead concentration of 200 mg/kg, then there is less than a 5% chance of exceeding a blood lead concentration of 10 µg/dL in children 0 to 84 months of age. As such, the non detect value for lead at the project detection limit is considered protective to human health.

3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

| Summary Exposure Pathway Evaluation Table | | | | | | | |
|---|-----------|---------|----------|--------------|-------------|------------|-------------------|
| “Contaminated” Media | Residents | Workers | Day-Care | Construction | Trespassers | Recreation | Food ³ |
| Groundwater | | | | | | | |
| Air (indoors) | | | | | | | |
| Soil (surface, e.g., <2 ft) | | | | | | | |
| Surface Water | | | | | | | |
| Sediment | | | | | | | |
| Soil (subsurface e.g., >2 ft) | | | | | | | |
| Air (outdoors) | | | | | | | |

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- _____ If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- _____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

³Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

⁴If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s):

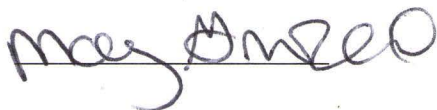
6. Check the appropriate RCRA Info status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Hawkeye Castings, Inc. facility, EPA ID # IAD984599589, located at 1077 South 3rd Street, Manchester, Iowa, under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by



Date:

8/24/2012

(signature)

Mary Grisolano

Project Manager, Missouri Iowa Remediation and Permitting Section

Waste Remediation and Permitting Branch

EPA Region 7

Supervisor



Date:

8/24/2012

(signature)

Jeremy Johnson

Section Chief, Missouri Iowa Remediation and Permitting Section

Waste Remediation and Permitting Branch

EPA Region 7

Locations where References may be found:

EPA Region 7 Headquarters

RCRA Files

901 North 5th Street

Kansas City, Kansas 66101

Contact telephone and e-mail numbers

Mary Grisolano

(913) 551-7657

grisolano.mary@epa.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

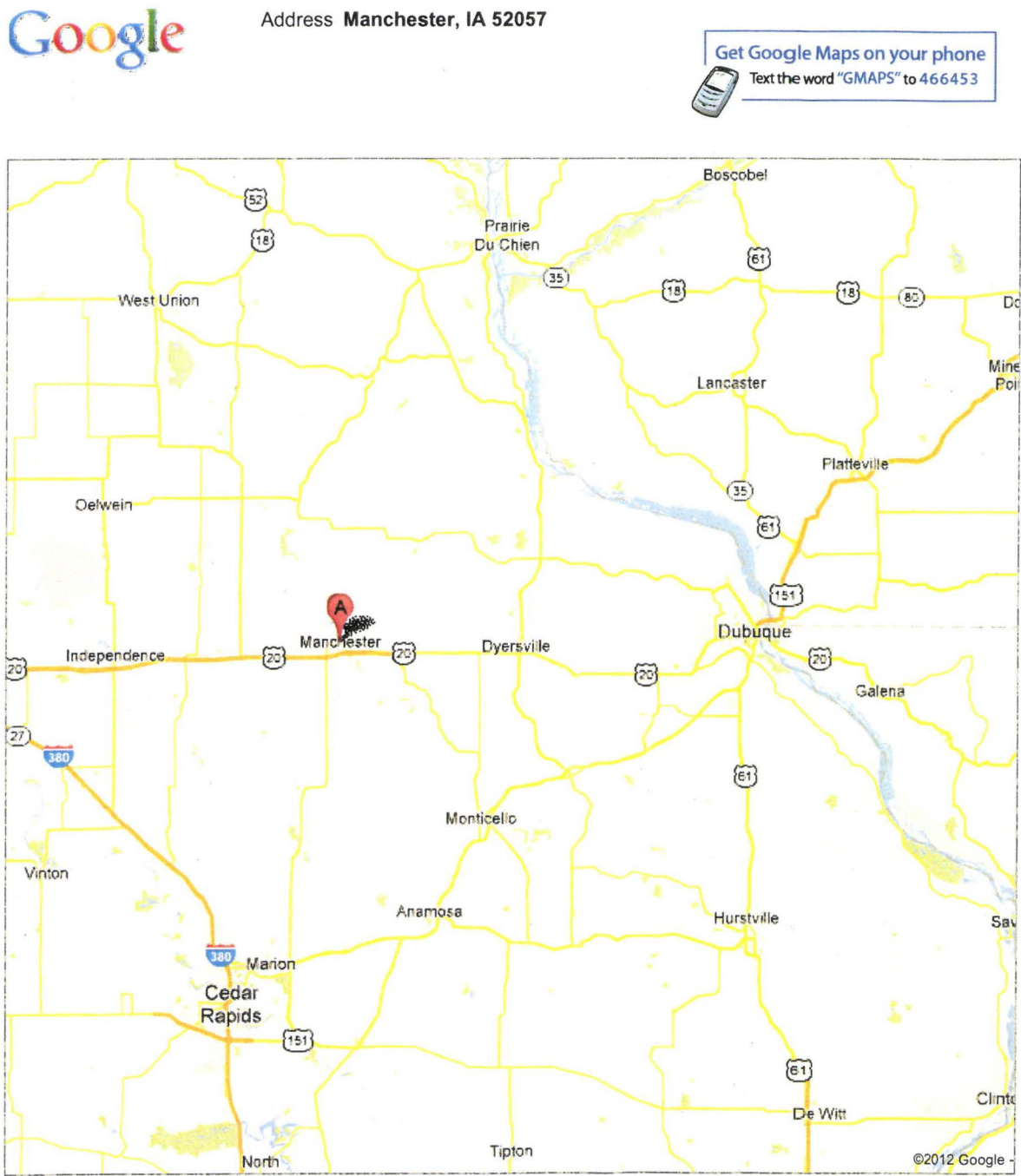


Figure 1a
Hawkeye Castings, Inc. Site Location Map



Address **1077 S 3rd St**
Manchester, IA 52057

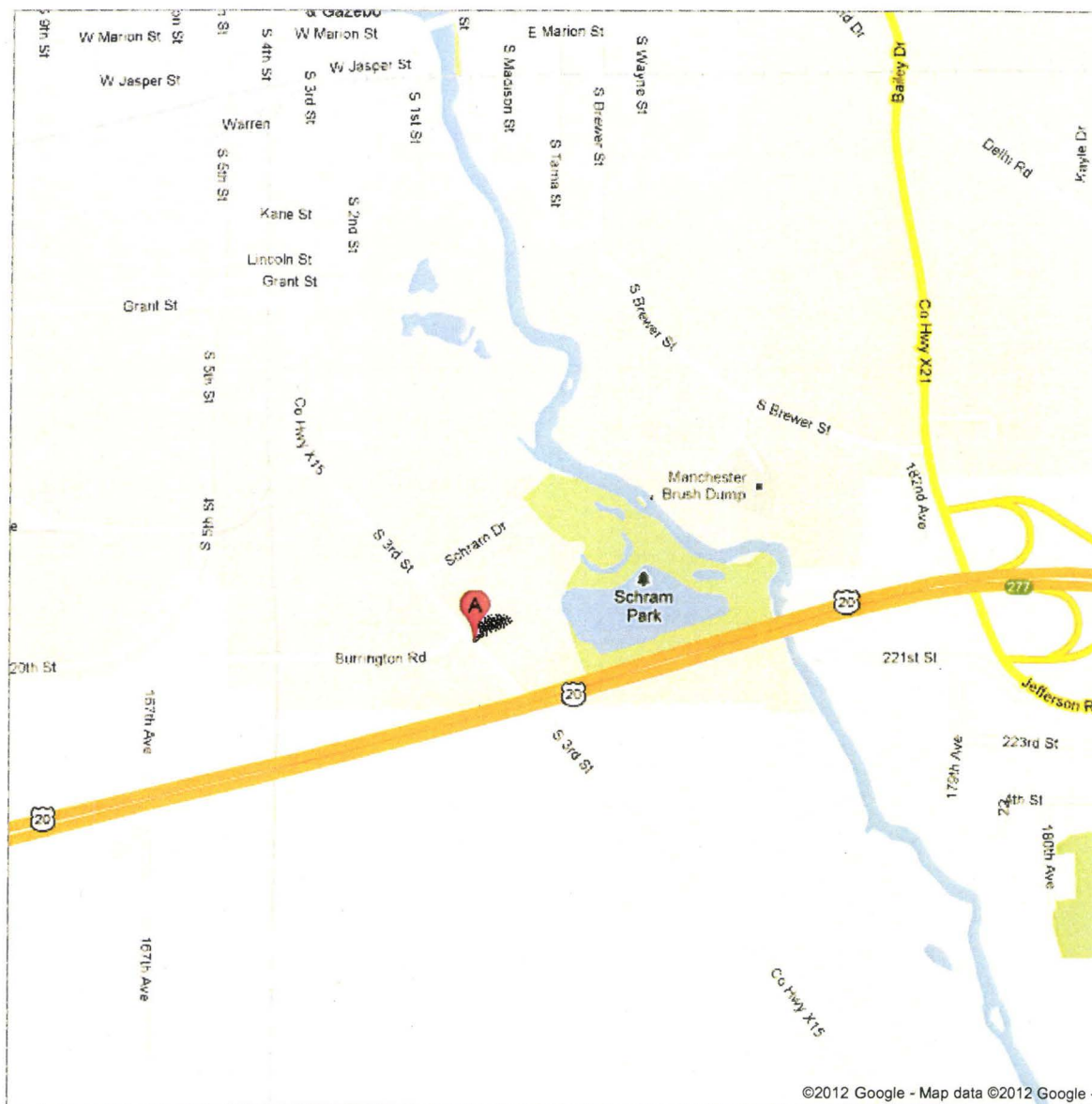
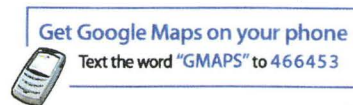


Figure 1b
Hawkeye Castings, Inc. Site Location Map

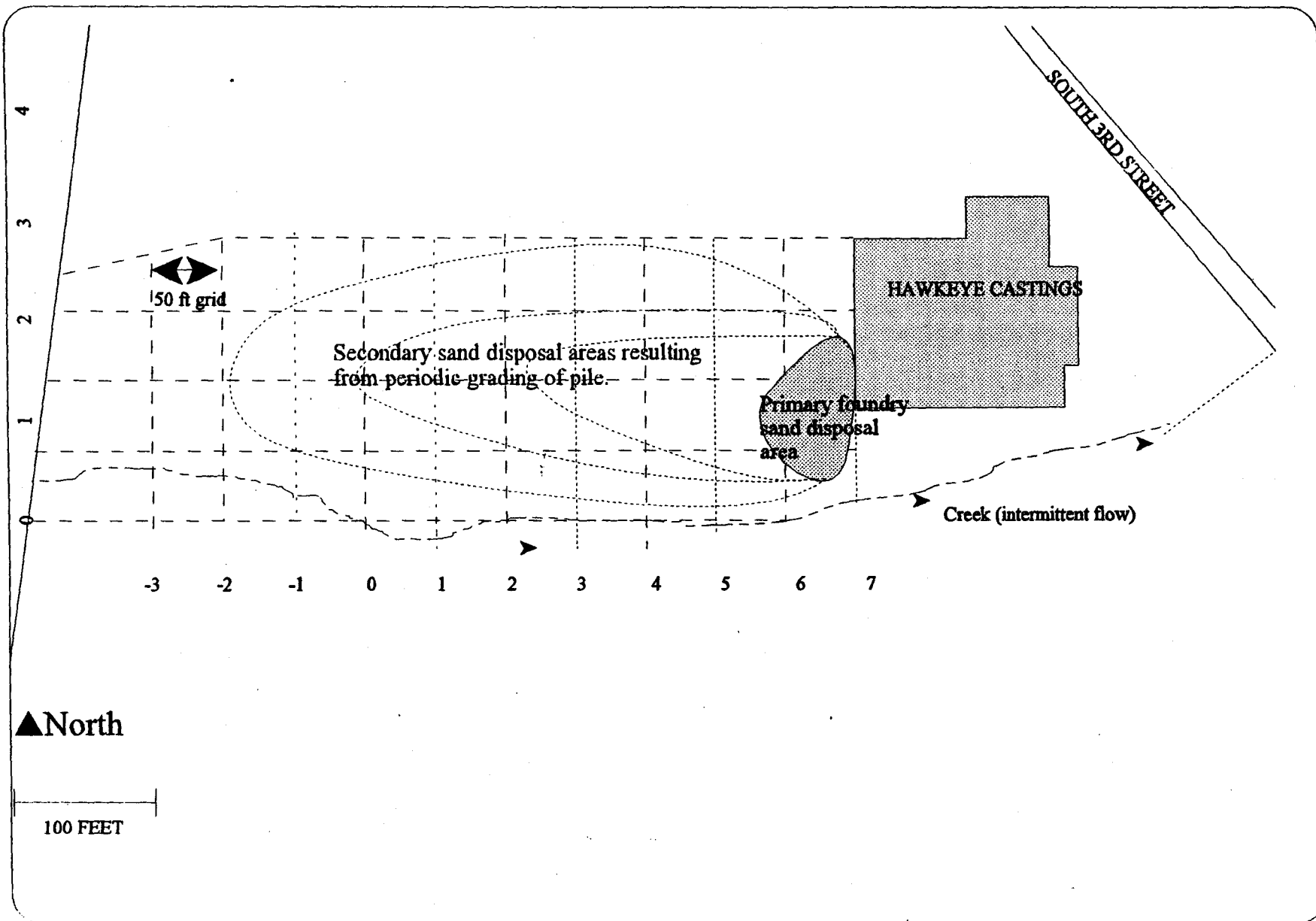


Figure 2
Approximate Area of Foundry Sand Placement
Hawkeye Castings, Inc

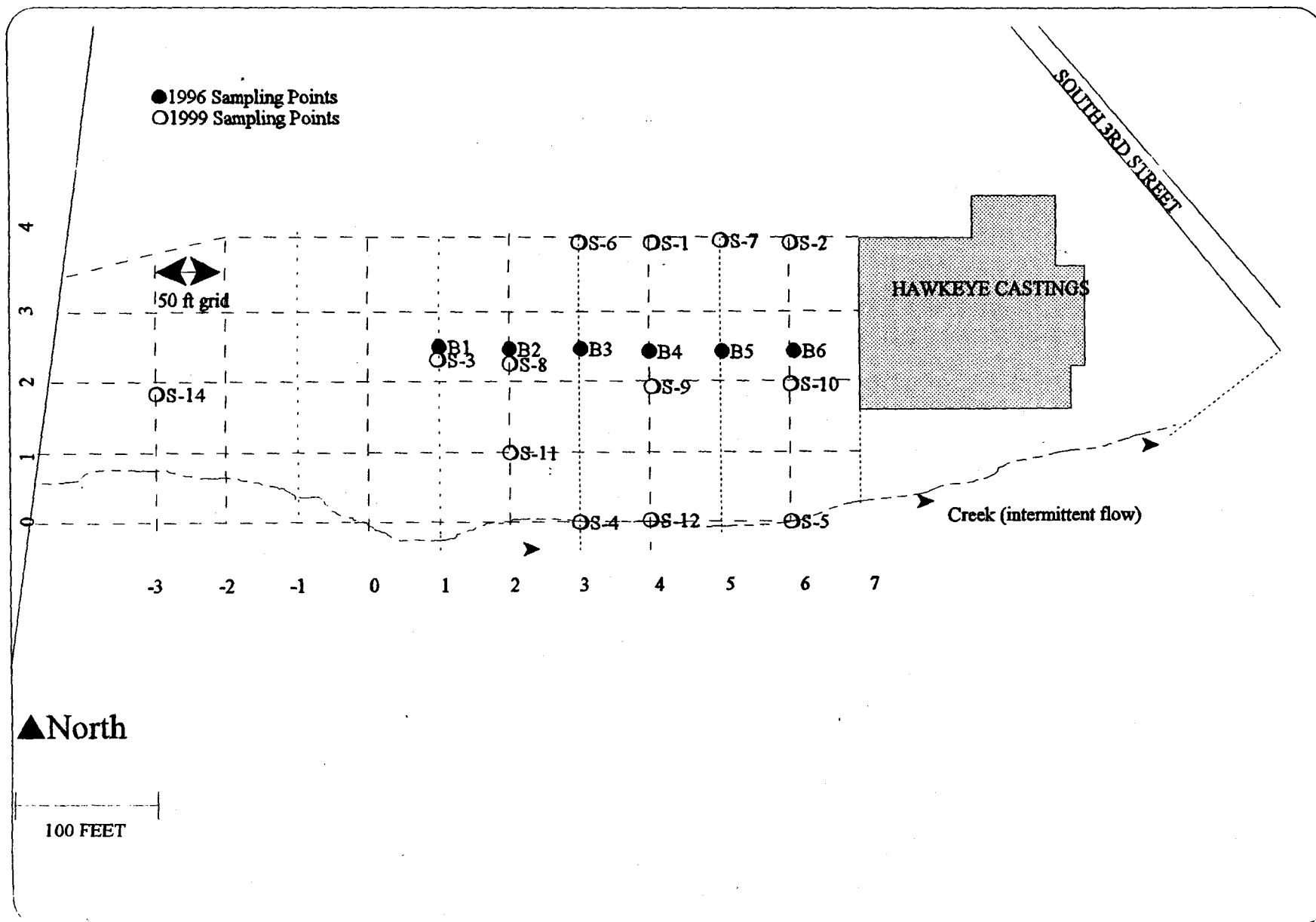


Figure 3
Soil Sample Location Map
Hawkeye Castings, Inc

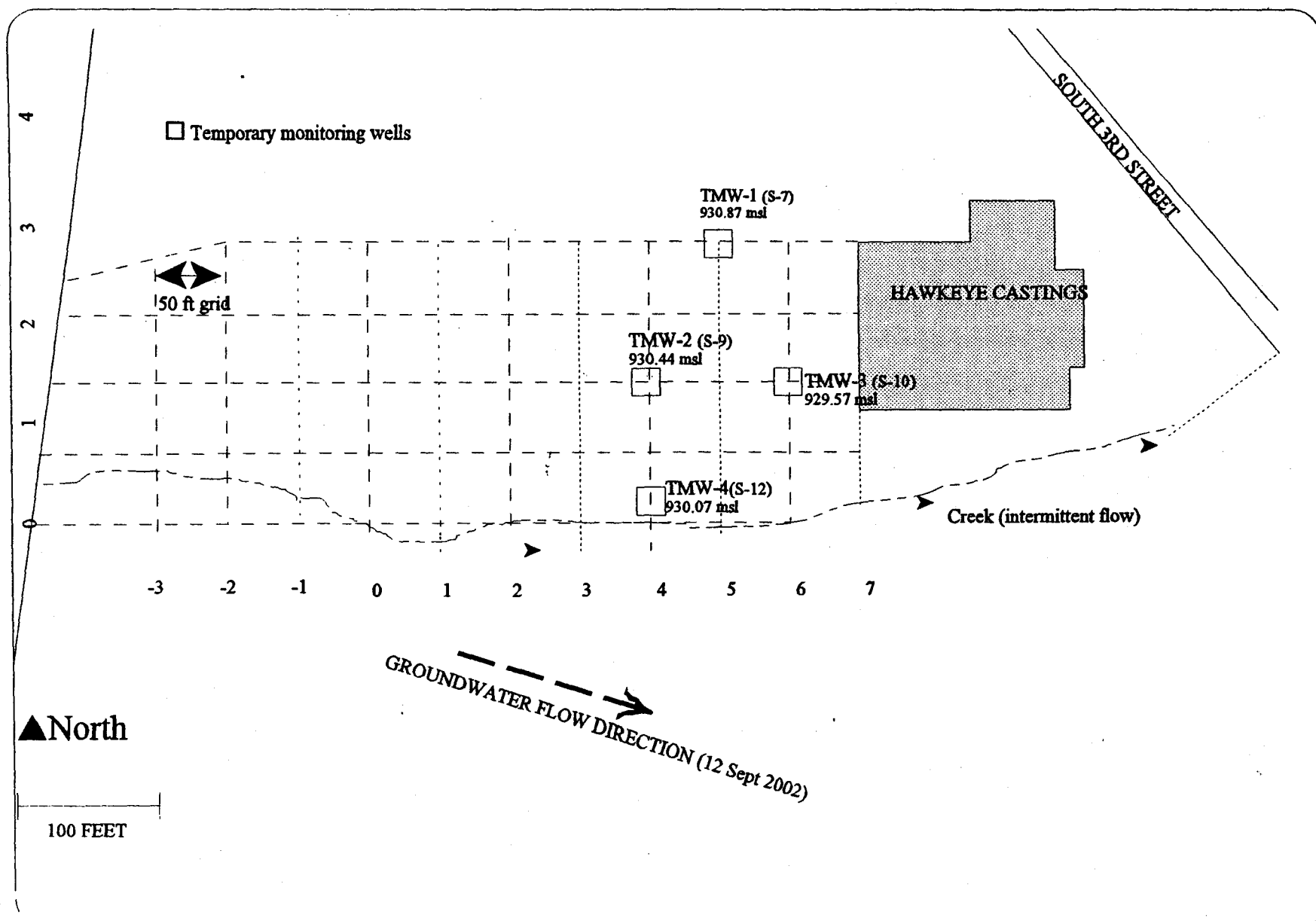


Figure 4
Well Location Map
Hawkeye Castings, Inc



Re: Fw: help with a CA725, need a lead number Hawkeye

Todd Phillips to: Mary Grisolano

07/30/2012 02:52 PM

Hi Mary,

The potential health risks from lead are evaluated differently than other contaminants because we account for multi-media exposure (i.e., air, drinking water, soil and dust, and dietary lead intakes) in predicting blood lead levels. As a result, it is difficult to determine a screening level for lead in surface water with any degree of certainty without characterizing the other sources of lead exposure. However, we did evaluate several different exposure scenarios using the IEUBK model and determined that exposure to a surface water lead concentration of 100 µg/L (the detection limit of lead in this study) falls within the EPA's health protection goal to ensure that children (<7 years old) would have no greater than a 5% chance of exceeding a blood lead concentration of 10 µg/dL. For example, if one assumes a child is exposed to 100 µg/L in surface water and lives at a residential property with a soil lead concentration of 200 mg/kg, then there is less than a 5% chance of exceeding a blood lead concentration of 10 µg/dL in children 0 to 84 months of age.

Please let me know if you have any questions.

Todd

Todd A. Phillips, Ph.D.
Environmental Assessment & Monitoring Branch
U.S. Environmental Protection Agency, Region 7
901 N. 5th Street
Kansas City, KS 66101
Phone: 913-551-7438
phillips.todd@epa.gov

Mary Grisolano

Jeremy mentioned fish ingestion, it appears fro...

07/18/2012 10:57:56 AM

From: Mary Grisolano/R7/USEPA/US
To: Todd Phillips/R7/USEPA/US@EPA
Date: 07/18/2012 10:57 AM
Subject: Fw: help with a CA725, need a lead number Hawkeye

Jeremy mentioned fish ingestion, it appears from google maps that there is a lake near the site that the cre

The business is located at 1077 South 3rd Street in Manchester, Iowa.

mary

----- Forwarded by Mary Grisolano/R7/USEPA/US on 07/17/2012 02:36 PM -----

From: Jeremy Johnson/R7/USEPA/US
To: Mary Grisolano/R7/USEPA/US@EPA
Date: 07/16/2012 01:43 PM
Subject: Re: Fw: help with a CA725, need a lead number

I recommend talking to the human health risk assessors about a screening level for surface water. With surface water you'll want to consider fish ingestion. Likely incomplete, but work with the risk assessor.

Jeremy D. Johnson, Chief
Missouri and Iowa Remediation and Permitting Section
AWMD/WRAP
EPA Region 7
913-551-7510
johnson.jeremy@epa.gov

| | | |
|------------------|---|------------------------|
| Mary Grisolano | Jeremy, the emails below are about Hawkeye C... | 07/16/2012 01:07:39 PM |
| Mary Grisolano | wow that is low, the site is in Iowa.. the body is... | 07/13/2012 10:36:10 AM |
| Venessa Madden | Mary - I can give you the chronic national ambie... | 07/09/2012 10:49:57 AM |
| Michael Beringer | Could you two please coordinate on this issue a... | 07/06/2012 12:36:21 PM |

Jeremy D. Johnson, Chief
Missouri and Iowa Remediation and Permitting Section
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| | | |
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| Michael Beringer | Could you two please coordinate on this issue a... | 07/06/2012 12:36:21 PM |